

DETAILED ACTION

Response to Amendment

1. The amendments to the claims, in the submission dated 10/22/09, are acknowledged and accepted.

Response to Arguments

2. Applicant's arguments filed 10/22/09 have been fully considered but they are not persuasive. Applicants argue that the prior art cited does not disclose that edges of the first fluid in contact with the inner wall are pulled towards the first electrode. The Examiner respectfully disagrees. Berge teaches a first fluid (13, conductor fluid) and a second fluid (11, insulating fluid) and a first electrowetting electrode (17, electrode). As shown in figure 6, the interface between fluids 13 and 11 is altered such that it is moved from position A to position B. As the interface is moved from position A to position B, the edges of the first fluid (13) in contact with the inner wall are pulled towards the first electrode (17) rather than away from the inner wall as Applicants argue. The interface of the first and second fluids in position B is nearer to the electrode than in position A such that the edges of the first fluid are pulled towards the electrode.

Specification

3. The title of the invention is objected to because it is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4, and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. (6,369,954) in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) and Feenstra et al. (WO 03/069380 A1) of record.

Consider claims 1 and 8, Berge et al. disclose (e.g. figures 1-2 and 6) a variable optical element and device comprising: a fluid chamber (not labeled); an optical axis (0 optical axis) extending through at least a portion of the fluid chamber; a first fluid which is at least one of a polar fluid and a conductive fluid (13, conductor liquid) and the second fluid (11, insulating liquid) in contact over an interface (labeled as A or B) extending transverse the optical axis, the fluids being substantially immiscible; the first fluid and the second fluid in edge contact with an inner wall of the fluid chamber (not labeled), and an interface adjuster (16, 17 electrodes) arranged to alter the configuration of the interface via the electrowetting effect [col. 3, lines 3-53]. Berge et al. also disclose an interface adjuster comprising: a first electrowetting electrode (17, electrode) in electrical contact with the first fluid (13, conductor liquid); at least one second electrowetting electrode (16, electrode) located adjacent to the interface (labeled as A or B); and a voltage source (V) for applying a voltage between the first and second electrodes for altering the configuration of the interface via the electrowetting effect such that the edges of the first fluid in contact with the inner wall (not labeled) are pulled toward the first electrode [col. 3, lines 3-52 and col. 5, lines 28-64].

However, Berge et al. do not disclose that the optical element is a mirror wherein the interface comprises a reflective material. Berge et al. and Borra et al. are related as variable optical devices. Borra et al. teach a variable mirror wherein an interface comprises a reflective material [Sections 4-5]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Berge et al., as taught by Borra et al., in order to broaden the applications and uses of the optical element to correct focusing errors in multiple systems.

However, the modified Berge et al. reference does not disclose that the inner wall includes a portion being hydrophilic and a portion being hydrophobic, wherein contact of the first and second fluids with the inner wall is initially in the hydrophobic portion. Berge et al., Borra et al. and Feenstra et al. are related as variable optical devices. Feenstra et al. teach a variable mirror including an inner wall (e.g. fluid contact layer) that includes a portion being hydrophilic and a portion being hydrophobic [pg. 1, lines 11-24]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, as taught by Feenstra et al., so that the shape of the lens can be varied by applications of voltage. Although the modified Berge et al. reference does not explicitly disclose that contact of the first and second fluids with the inner wall is initially in the hydrophobic portion, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to try such an arrangement since first and second fluids are disclosed that there are a finite number of potential ways in which contact can first occur with the inner wall. A person with ordinary skill in the art has good reason to pursue the

known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product is not of innovation but of ordinary skill and common sense; see **Pfizer, Inc. v. Apotex, Inc. (480 F.3d 1348, 82 USPQ 2d 1321 (Fed. Cir. 2007))**.

Further a person of ordinary skill in the art would have been motivated to modify the device such that contact with the inner wall first occurs in the hydrophobic portion so that the variable surface can be modified as desired through the application of voltage.

Consider claim 2, the modified Berge et al. reference discloses that the reflective material comprises a metal [Borra et al.: Sections 4-5].

Consider claim 3, the modified Berge et al reference discloses that the reflective material comprises a Metal Liquid-Like Film [Borra et al.: Sections 4-5].

Consider claim 4, the modified Berge et al. reference discloses that the reflective material comprises a thin metal layer on an organic polymer layer [Borra et al.: Sections 4-5].

Consider claim 6, the modified Berge et al. reference discloses (e.g. figures 1-2 of Berge et al.) a device wherein an edge of the interface (labeled as A or B) is constrained by the fluid chamber (not labeled) and the second electrowetting electrode (16, electrode) is arranged to act on at least a portion of the interface edge [col. 2, lines 3-52 of Berge et al.].

Consider claim 7, the modified Berge et al. reference discloses (e.g. figures 1-2 of Berge et al.) a device wherein the second electrode (16, electrode) is separated from the interface (labeled as A or B) by at least a portion of the second fluid (11, insulating liquid) [col. 3, lines 3-52 of Berge et al.].

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) and Feenstra et al. (WO 03/069380 A1) of record, as applied to claim 1 above, and further in view of Hügenell (5,430,577) and Kogelnik et al. (Applied Optics, Vol. 5, No 10, October 1965) of record.

Consider claim 9, the modified Berge et al. reference does not disclose an optical device that comprises a laser cavity including the variable mirror, the cavity further including a second mirror. Berge et al., Borra et al., Feenstra et al. and Hügenell are related as optical devices. Hügenell teaches (e.g. figure 1) an optical device wherein the optical devices comprises a cavity (12, reflector support system) including the variable mirror (5,7 primary mirrors) and a second mirror (2, 3 secondary mirrors) [col. 2, lines 23-58, col. 4, lines 8-48]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, as taught by Hügenell, in order to improve image quality by adjusting the variable elements to provide wavefront error correction. However, the modified Berge et al. reference does not disclose that the cavity is a laser cavity. Berge et al., Borra et al, Feenstra et al., Hügenell et al. and Kogelnik et al. are related as optical elements. Kogelnik et al. teach a laser cavity that includes two mirrors [Section 3.5]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, in order to use the technology of variable mirrors to correct for curvature aberrations in other systems comprising mirrors.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) and Feenstra et al. (WO 03/069380 A1) of record, as applied to claim 1 above, and further in view of Hügenell (5,430,577).

Consider claim 10, the modified Berge et al. reference does not disclose that the optical device comprises a Cassegrain system comprising a primary mirror and a secondary mirror, the primary mirror being formed by a variable mirror. Berge et al., Borra et al., Feenstra et al. and Hügenell are related as devices with variable optical elements. Hügenell discloses (e.g. figure 1 of Hügenell) an optical device wherein the optical device comprises a Cassegrain system comprising a primary mirror (5, 7 primary mirrors) and a secondary mirror (2,3 secondary mirrors), the primary mirror being formed by a variable mirror [col. 2, lines 23-58, col. 4, lines 8-48]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, as taught by Hügenell, in order to improve image quality by adjusting the variable elements to provide wavefront error correction.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Berge et al. in view of Borra et al. (The Astrophysical Journal, 516:L115-L118, 1999 May 10) and Feenstra et al. (WO 03/069380 A1) of record, as applied to claim 1 above, and further in view of Yamada (JP 8-190070 A).

Consider claim 11, the modified Berge et al. reference does not disclose that the optical devices comprises an optical scanning device for scanning an optical record

carrier. Berge et al., Borra et al., Feenstra et al. and Yamada are related as optical devices. Yamada discloses (e.g. figures 1 and 2) an optical device comprising an optical scanning device for scanning an optical record carrier (7, scan layer) [abstract]. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of the modified Berge et al. reference, as taught by Yamada, in order to correct for curvature aberrations to reduce scanning error.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **JADE R. CALLAWAY** whose telephone number is

(571)272-8199. The examiner can normally be reached on Monday to Friday 6:00 am - 3:30 pm est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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